Claims

1. A front-side repairable TFT-LCD assembly comprising:

a TFT-LCD equipped with a first multiplicity of buslines,

at least one repair line positioned outside of and in parallel with a circuitry on said TFT-LCD, said at least one repair line intersects said first multiplicity of buslines with an insulating layer thereinbetween, and

a black matrix film coated on a glass substrate positioned juxtaposed to said repair lines and buslines, said black matrix film having a second multiplicity of apertures formed therethrough each corresponding to a location where one of said at least one repair line intersects said first multiplicity of buslines allowing a laser to pass therethrough.

2. A front-side repairable TFT-LCD assembly according to claim 1 further comprising at least three spaced-apart and parallel repair lines positioned outside of and in parallel with a circuitry of said TFT-LCD.

3. A front-side repairable TFT-LCD assembly according to claim 1 further comprising at least five spaced apart and parallel repair lines positioned outside of and in parallel with a circuitry of said TFT-LCD.

4. A front-side repairable TFT-LCD assembly according to claim 1, wherein said first multiplicity of buslines comprises gate buslines and data buslines.

5. A front-side repairable TFT-LCD assembly according to claim 1, wherein said glass substrate having said black matrix film coated thereon is used as a front cover in said TFT-LCD assembly.

6. A front-side repairable TFT-LCD assembly according to claim 1, wherein said second multiplicity of apertures formed in said black matrix film allows a laser to pass therethrough for welding a repair line to a busline.

7. A front-side repairable TFT-LCD assembly according to claim 1, wherein said second multiplicity of apertures formed in said black matrix film allows a laser beam to pass therethrough for severing a busline.

8. A front-side repairable TFT-LCD assembly according to claim 1, wherein said black matrix film is formed in a photolithographic/etching method.

9. A front-side repairable TFT-LCD assembly according to claim 1, wherein said second multiplicity of apertures formed in said black matrix film is used for laser repair after an array test or after a panel power-up test.

10. A method for fabricating a front-side repairable TFT-LCD assembly comprising the steps of:

providing a TFT-LCD equipped with a first multiplicity of buslines,

providing at least one repair line laid out around a circuitry on said TFT-LCD, said at least one repair line intersects said first multiplicity of buslines with an insulating layer thereinbetween,

coating a black matrix film on a glass cover plate in said TFT-LCD,

patterning said black matrix film and forming a second multiplicity of apertures therein each corresponds to a cross-over point where one of said at least one repair line intersects said first multiplicity of buslines, and

mounting said glass substrate having said black matrix film patterned with a second multiplicity of apertures therein on said TFT-LCD as a cover plate.

10 11. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of patterning said black matrix film by a photolithographic method.

11 12. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of forming said second multiplicity of apertures in said black matrix film by an etching method.

12 13. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of passing a laser beam through at least one of said

multiplicity of apertures in said black matrix film to effectuate a repair on said TFT-LCD.

13 14. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of testing said TFT-LCD in an array test in a panel power-up test.

14 15. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of providing at least three spaced-apart and parallel repair lines around a circuitry on said TFT-LCD, said at least three repair lines intersect said first multiplicity of buslines with an insulating layer thereinbetween.

16. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of providing at least five spaced-apart and parallel repair lines laid out around a circuitry on said TFT-LCD, said at least three repair lines intersect said first multiplicity of buslines with an insulating layer thereinbetween.

16 17. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10, wherein said first multiplicity of buslines comprises gate buslines and data buslines.

17 18. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of passing a laser beam through at least one of said second

multiplicity of apertures in said black matrix layer to severe a busline or a gate line that is connected to a defective circuit in said circuitry.

19. A method for fabricating a front-side repairable TFT-LCD assembly according to claim 10 further comprising the step of passing a laser beam through at least one of said second multiplicity of apertures in said black matrix layer to weld a repair line to a busline by fusing through said insulating layer.

18 20. A method for repairing a front-side repairable TFT-LCD assembly comprising the steps of:

providing a TFT-LCD equipped with a first multiplicity of buslines,

providing at least one repair line laid out around a circuitry on said TFT-LCD, said at least one repair line intersects said first multiplicity of buslines with an insulating layer thereinbetween,

coating a black matrix film on a glass substrate used as a cover plate for said TFT-LCD,

patterning said black matrix film and forming a second multiplicity of apertures therein each corresponds to a cross-over point where one of said at least one repair line intersects said first multiplicity of buslines,

mounting said glass substrate having said black matrix film patterned with a second multiplicity of apertures therein on said TFT-LCD as a cover plate,

testing said TFT-LCD in an array test or in a panel power-up test and locating at least one defective circuit in said circuitry, and

irradiating a laser beam through said second multiplicity of apertures in said black matrix film to effectuate a repair on said at least one defective circuit.

19 — 21. A method for repairing a front-side repairable TFT-LCD assembly according to claim 20 further comprising the step of effectuating a repair on said at least one defective circuit by severing at least one busline that is connected to said at least one defective circuit.

20 — 22. A method for repairing a front-side repairable TFT-LCD assembly according to claim 20 further comprising the step of effectuating a repair on said at least one defective circuit by welding at least one repair line to at least one busline for bypassing said at least one defective circuit.